

**Interim Measure Modification
Evaluation Progress Report
1 of 6**

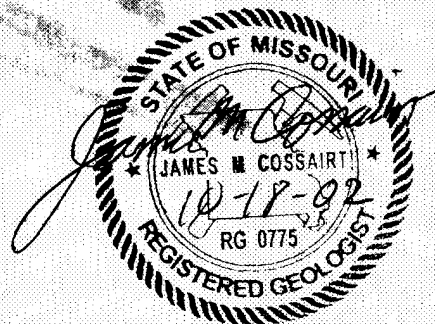
for

**Industrial Service Corporation
1633 S. Marsh Avenue
Kansas City, Missouri**

Prepared By:

**Deffenbaugh Industries, Inc.
18181 West 53rd Street
Shawnee, Kansas 66217**

October, 2002



October 16, 2002

Mr. Tom Judge, RG
Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102

Re: Administrative Order on Consent for Corrective Action #VII-94-H-0024 (AOC) and
Post-Closure activity at Industrial Service Corporation (ISC).

Dear Mr. Judge:

This letter report is prepared to convey the results of the first round of six bi-monthly sampling events intended to evaluate the effectiveness of the groundwater extraction and treatment system. System operation commenced on June 6, 2002. An installation report was prepared and submitted in July describing the installation and first month of system operation. This report will cover the period from the installation report to September 30, 2002.

System Operation and Aquifer Response

A graph of the volume of groundwater extracted on a daily basis from the inception date to the end of the reporting period is included for reference. The gradual decline in volume was attributed originally to the depletion of groundwater in storage within the aquifer until August 20, 2002. At that time, pump PW-2 ceased pumping completely as the discharge line was plugged with an orange gelatinous growth. Both pumps were removed, the discharge lines were cleaned, and the pumps were re-installed.

On September 3, 2002 the system was found inoperable due to a high limit switch shutoff in the poly holding tank. It was found that discharge flow had become reduced in the adsorber tanks resulting in the overfilling of the poly holding tank. The tank was manually discharged and the system was re-started. On September 9, 2002 the adsorber units were re-plumbed to facilitate a back-flush procedure, and the $\frac{3}{4}$ inch discharge lines at each pump were replaced with $1 \frac{1}{4}$ inch discharge tubing. There was a corresponding increase in discharge volume interrupted only once at PW-2. On September 23, 2002 pump PW-2 had ceased operation. It was re-started by adjusting the air regulator and flow control valve at the well head and has continued pumping through the balance of the reporting period.

A hydrograph is also enclosed which corresponds in time to the flow graph previously discussed. The response of the "B" series bedrock wells to interruptions in the operation of the extraction system is consistent with that observed in the installation report. When the system stops operating, there is an immediate rise in the static water elevations of wells installed in this horizon. Similarly, when the system is resumed there is a corresponding drop in the static water elevation. There is no similar direct hydraulic connection observed in any other wells installed at the site.

The hydrograph has been modified from the one submitted in the installation report to include the water elevation of the Blue River. It was found that this data is also available from the USGS web site which provides access to precipitation data for the Blue River at 12th Street. The graph indicates that the Blue River is maintained on average at an elevation between 728 and 730 feet above mean sea level. At installation the extraction pumps were set to achieve a water elevation between 720 and 724 feet. In effect, the pumps were attempting to drop the water elevation below that of the river. When the discharge tubing size was increased on September 9th, the pumps were raised to coincide with the Blue River elevation. The result has been that the water elevation of the "B" series wells has been lowered another 3 to 4 feet since that date.

Water elevation data from the extraction wells has been inconsistent. This was due to the fact that the diameter of the access port in the well cap would only allow a lightweight, small diameter water level indicator probe to pass through. The design of the probe was such that contact made against the damp wall of the well casing, as well as air and discharge tubing within the well casing, would yield erroneous measurements. With the modification to the discharge tubing, the well cap was also modified to allow access of an oil/water interface meter which provides more accurate readings. Water level measurements recorded since that time are more consistent and confirm the pumps are maintaining a level consistent with that of the Blue River.

Figures 1- 4 have been prepared and are enclosed to illustrate the potentiometric surfaces of the aquifer. Figures 1 and 2 were constructed to depict the potentiometric surface as it appeared at the time of sample collection on August 21, 2002. Due to the fact that pump PW-2 was inoperable on that date, static water elevations were used from the most recent previous data collected on August 12, 2002. Static water elevations from the product wells GW-3, GW-4, and EPA-R-1 were measured on August 20, 2002. Figure 1 is constructed using static water elevations from the "A" series wells and Figure 2 utilizes data collected from the "B" series wells.

A comparison of the two figures indicates that the potentiometric surface depicted in figure 2 presents the more realistic representation of the flow regime. The contours in Figure 1 are forced into an acute angle surrounding well EPA-R-1 indicating a poor hydraulic connection between these data points. The contours in Figure 2 illustrate a more credible representation of groundwater flow in a generally west trending direction at a fairly consistent gradient.

Figures 3 and 4 were prepared from data collected on September 30, 2002. A comparison of these figures supports the previously drawn conclusion that the "B" series wells are in better hydraulic connection with the up-gradient wells than are the "A" series wells. Figure 4 depicts an improved gradient surrounding the extraction wells. This is believed to be attributable to the modifications made on September 9th when the pumps were raised in elevation within the wells, thus optimizing the drawdown per volume of water extracted.

Groundwater Analytical Results

Samples of groundwater were collected from the approved subset of wells for this evaluation on August 20 & 21, 2002. Due to the reported pump failure at PW-2, that sample was collected on August 22 and shipped to the laboratory with a replacement sample for well GW-2R which had been broken. All samples were collected following the approved procedures in the Sampling and Analysis Plan (SAP). All samples were analyzed by Environmental Science Corporation, Mt. Juliet, TN for the volatile organic compounds (VOC) contained in Attachment A of the SAP. Copies of the analytical reports and a laboratory prepared QA/QC review are enclosed for reference.

All samples were received at the correct temperature, in the proper containers, and with the appropriate preservatives. The samples were analyzed within holding times. Trip blanks and rinse blanks were analyzed without detections of any analytes. The field duplicate sample was reported with concentrations at comparable levels to the original sample. The laboratory review provides a summary of laboratory control standards, matrix spike and matrix spike duplicates, blank analysis, surrogate recoveries, internal standards, calibration, and instrument performance standards. Some of the analytes for some of the samples are qualified on the basis of accuracy, precision, and matrix interference. A listing of these analytes and associated qualifiers is included in Attachment A of the analytical report. None of these analytes were detected in the samples and no reported concentrations require qualification. Samples which required dilution due to high concentrations of one or more of the analytes are noted on the report with the dilution factor used for the analysis.

The data is summarized and presented in the following table. Only compounds with reported detections are included in the table. Compounds not detected in the sample are so indicated by the letters BDL (below detection level) and are followed by the reportable concentration for that analyte in that sample.

ISC-KC FIRST BI-MONTHLY ANALYSIS

8-21-02

VOC's (ug/L)	PW-1	PW-2	TRENCH	EFFLUENT	GW-2R	GW-3	GW-4	EPA-R-1
BENZENE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	58.0	80.0	290.0
1,1-DICHLOROETHANE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	BDL(50)	BDL(50)
CIS-1,2-DICHLOROETHENE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	BDL(50)	BDL(50)
1,4-DIOXANE	BDL(100)	BDL(1000)	BDL(1000)	280.0	680.0	BDL(1000)	3300.0	BDL(1000)
METHYL TERT-BUTYL ETHER	1.3	25.0	14.0	4.2	BDL(5)	14.0	26.0	130.0
NAPHTHALENE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	BDL(50)	100.0
TOLUENE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	BDL(50)	190.0
TRICHLOROETHENE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	BDL(50)	BDL(50)
1,2,4-TRIMETHYLBENZENE	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	BDL(50)	59.0
VINYL CHLORIDE	BDL(2)	BDL(20)	BDL(20)	BDL(2)	BDL(10)	BDL(20)	BDL(20)	BDL(20)
xylene	BDL(5)	BDL(50)	BDL(50)	BDL(5)	BDL(25)	BDL(50)	120.0	390.0

ISC-KC FIRST BI-MONTHLY ANALYSIS (CONT.)

[illegible]

A total of eleven compounds were detected from the analyses of these wells. Five of these were detected at only one location. Naphthalene, toluene, and 1,2,4-trimethylbenzene were detected in the sample collected from EPA-R-1 at concentrations of 100.0, 130.0, and 59.0 ug/L respectively. Trichloroethene and 1,1-dichloroethane were detected in the sample collected from well GW-6B at concentrations of 13.0 and 8.2 ug/L respectively. The reported concentration of naphthalene meets the guidance level of Missouri's CALM document and exceeds the levels specified in 10 CSR 20-7, EPA Region III RBC table, and EPA Region 9 PRG table. The level reported for 1,2,4-trimethylbenzene exceeds the levels specified for both the RBC and PRG tables. The level reported for trichloroethene exceeds all regulated and guidance levels for this compound. The reported concentration for toluene and 1,1-dichloroethane was below all regulated and guidance levels.

Isoconcentration maps have been prepared for all compounds detected at more than one location. Figures 5 through 10 graphically depict the isoconcentrations constructed for the compounds benzene, cis-1,2-dichloroethene, 1,4-dioxane, MTBE, vinyl chloride, and xylene in that order. All isoconcentration lines are constructed based on the data collected from this sampling round. Depicted concentrations will be skewed in the direction of the nearest reported non-detect location. Figure 5 for instance, which depicts the concentrations of benzene, is believed to be a fairly accurate representation in the area of wells GW-3, GW-4, and EPA-R-1; but is skewed to the west in order to reach the nearest wells which are not reported with detections. This compound when detected is in exceedance of all regulated and guidance documents. It is not detected in any of the down-gradient wells.

Figure 6 is also consistent with previously submitted depictions of cis-1,2-dichloroethene. The isoconcentrations are truncated in the up-gradient direction due to a lack of data points, but it is believed they would be reasonably symmetrical about well GW-6B. The reported concentrations do not exceed a regulated level but do exceed guidance levels in both the RBC and PRG tables.

Figure 7 is an isoconcentration map for the compound 1,4-dioxane. A combination of elevated reporting levels from some of the wells in conjunction with multiple monitored horizons make this a difficult compound to depict. In constructing the isoconcentration lines in this figure, the non-detect value reported from well EPA-R-1 was ignored. The non-detect value reported from well GW-11B was also ignored and the value reported from well GW-11C was utilized instead. The isoconcentrations thus depict a connected plume across the site which may or may not be true. Hopefully future sampling rounds will yield data that provides a better understanding. The data does indicate that the largest concentrations remain up-gradient to the extraction points and are within the capture zone of the pumps. Any detected value of this compound exceeds the guidance levels specified in the CALM document and in the RBC and PRG tables. There are no regulatory levels for this compound.

Figure 8 is the isoconcentration map constructed for the compound methyl tert-butyl ether. Concentrations reported from the wells containing free product range from 26.0 to 130.0 ug/L. The compound is detected at only two down-gradient locations. MTBE is reported at a concentration of 4.1 ug/L at well GW-9B and at a concentration of 13.0 at well GW-6B. The CALM document establishes a level of concern for this compound at 20 ug/L. RBC and PRG tables establish a level of concern for tap water at 2.6 and 13.0 ug/L respectively.

Figure 9 is an isoconcentration map constructed for the compound vinyl chloride. Vinyl chloride is reported at well GW-11C at a concentration of 110.0 ug/L and at well GW-6B at a concentration of 2.8 ug/L. All locations down-gradient of the extraction points are reported non-detect at a reporting level of 2 ug/L. Up-gradient points containing free product are reported non-detect at a reporting level of 20 ug/L due to required dilutions of the sample. Regulatory levels for this compound are established at a concentration

of 2 ug/L and this value has been adopted by the CALM document also. Guidance levels are established at concentrations of .015 and .020 ug/L in the RBC and PRG tables respectively.

Figure 10 is the isoconcentration map constructed for the compound xylene. This map is very similar to the benzene map constructed in Figure 5. Concentrations reported are 120 and 390 ug/L at locations GW-4 and EPA-R-1 respectively. The concentration reported for well EPA-R-1 exceeds guidance levels contained in the CALM document and the PRG table.

Time-series charts have also been prepared for the down-gradient wells which have reported detections of VOC's. A total of seven analytes have been detected in these wells. The compound cis-1,2-dichloroethene was added to the list of analytes during the second quarter of 2000. Analytes 1,4-dioxane and methyl tert-butyl ether were added in the second quarter of 2002. The charts are prepared from the date of each well installation to the present.

The graph of well GW-6B documents the longest period of time. Concentrations of all detected compounds generally diminish over time until this most recent round of samples was collected in August. Six of the analytes were detected at this location which is the monitoring point nearest to the extraction wells. This indicates that the extraction wells are having a positive influence on the contaminant plume by inducing migration of contaminants in the direction of the pumping wells.

The graphs of wells GW-8B, 9B, and 10B show fluctuating concentrations over time. GW-8B was most recently non-detect for all compounds analyzed. MTBE and vinyl chloride were detected at low levels during the previous round and cis-1,2 dichloroethene was last reported in the fourth quarter of 2001. The concentrations of cis-1,2-dichloroethene and MTBE increased at well GW-9B while vinyl chloride declined below reportable levels. Concentrations of all compounds reported from well GW-10B declined in the most recent analysis. The most notable was the decline of 1,4-dioxane from 380 ug/L in May to 140 ug/L in August. Concentrations of detected analytes should decline at each of these locations in response to continued groundwater extraction.

The graphs of wells GW-11B and 11C document the shortest period of time. The graph of well GW-11B indicates a reduction in two of the four detected compounds between the fourth quarter of 2001 and second quarter of 2002. All compounds were below reportable levels in the most recent round of analysis. The concentration of vinyl chloride reported at well GW-11C has remained relatively unchanged over the monitored period whereas the concentration of 1,4-dioxane has increased significantly.

Time-series graphs have also been prepared for wells which have been reported with a layer of LNAPL at any time in the past. This time period begins with samples collected by a micro-purge sampling technique initiated during the third quarter of 2000. Samples were not able to be collected from wells GW-2R and EPA-R-1 during the fourth quarter of 2000. A sample was also not collected from well GW-2R during the fourth quarter of 2001. A logarithmic scale is employed with these graphs due to the number of compounds detected and the range of reportable concentrations.

Generally, the detected compounds are BTEX and associated analytes. Concentrations fluctuate with time and demonstrate no evidence of a sustained trend. Some compounds at lower concentrations are eliminated periodically from the graph because of elevated reporting levels due to required sample dilutions. The graph of EPA-R-1 is a good example. Many compounds reported during early 2001 are not included in the two most recent rounds due to elevated reporting levels caused by the high concentration of Xylenes contained within the sample. The graph of GW-3 indicates concentrations are generally lower at this location than at EPA-R-1 and GW-4.

The presence of 1,4-dioxane at wells GW-4 and GW-2R is the notable change in the graphs of these two wells. That compound has not been detected in samples previously analyzed from these wells. It is also not detected below a reporting level of 1000 ug/L in wells located between them and those located further down-gradient which are reported with detections of the same compound above that reporting level.

Summary

The data indicates that the extraction system is providing a positive influence on the groundwater contaminant plume at the facility. Additional information is required and will be collected over the balance of the evaluation period.

The hydrograph and potentiometric surface maps clearly demonstrate a direct connection between the extraction wells and "B" zone monitoring wells installed near the base of the aquifer. A cone of depression has been established surrounding the extraction wells and has reversed flow from monitoring locations installed immediately down-gradient.


The analytical data collected from this lower zone yield a preliminary indication that concentrations are increasing near the extraction points and may be decreasing in wells installed further down-gradient. The GW-11 series well cluster indicates that the "A" series water table zone continues to be non-detect for all volatile analytes at this point, and that the extraction wells may be responsible for a significant decline in the concentrations of volatiles detected in the "B" horizon. Data collected from well GW-11C indicates that more information is required to establish a relationship between contaminants in this zone and the affects of groundwater extraction.

Analytical data collected from the LNAPL wells also indicate the need for more and improved data relative to dilutions of samples and elevated reporting levels. The laboratory has been requested to minimize future dilutions in these analyses and will comply to the level practical. It is the goal of this practice to lower reporting levels of all analytes within the dissolved phase plume. In particular, a lower reporting level in theses wells for the compound 1,4-dioxane would improve our understanding of the connection of this constituent between these wells and those located further down-gradient.

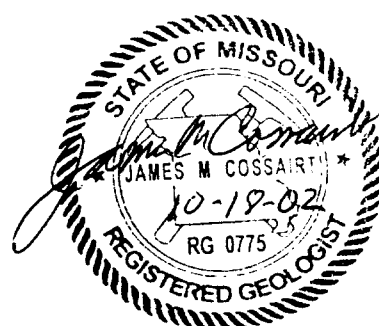
Modifications made to the extraction and treatment system have improved the efficiency of operation. By increasing the discharge hose diameter, flow from the pumps is less restricted and the potential for blockage has been reduced. Raising the pumps within the extraction wells to an elevation more equivalent to the level of the Blue River has improved the efficiency of the system and improved aquifer drawdown. Periodic back-flushing of the adsorber units will help to insure continuous operation of the system, and minimize the potential for downtime.

The next round of samples collected for the purpose of this evaluation will coincide with the semi-annual analysis for Post-Closure care which is scheduled to begin November 5, 2002. The report of this well subset analysis will be submitted concurrent with the fourth quarter progress report on January 15, 2003.

Sincerely,

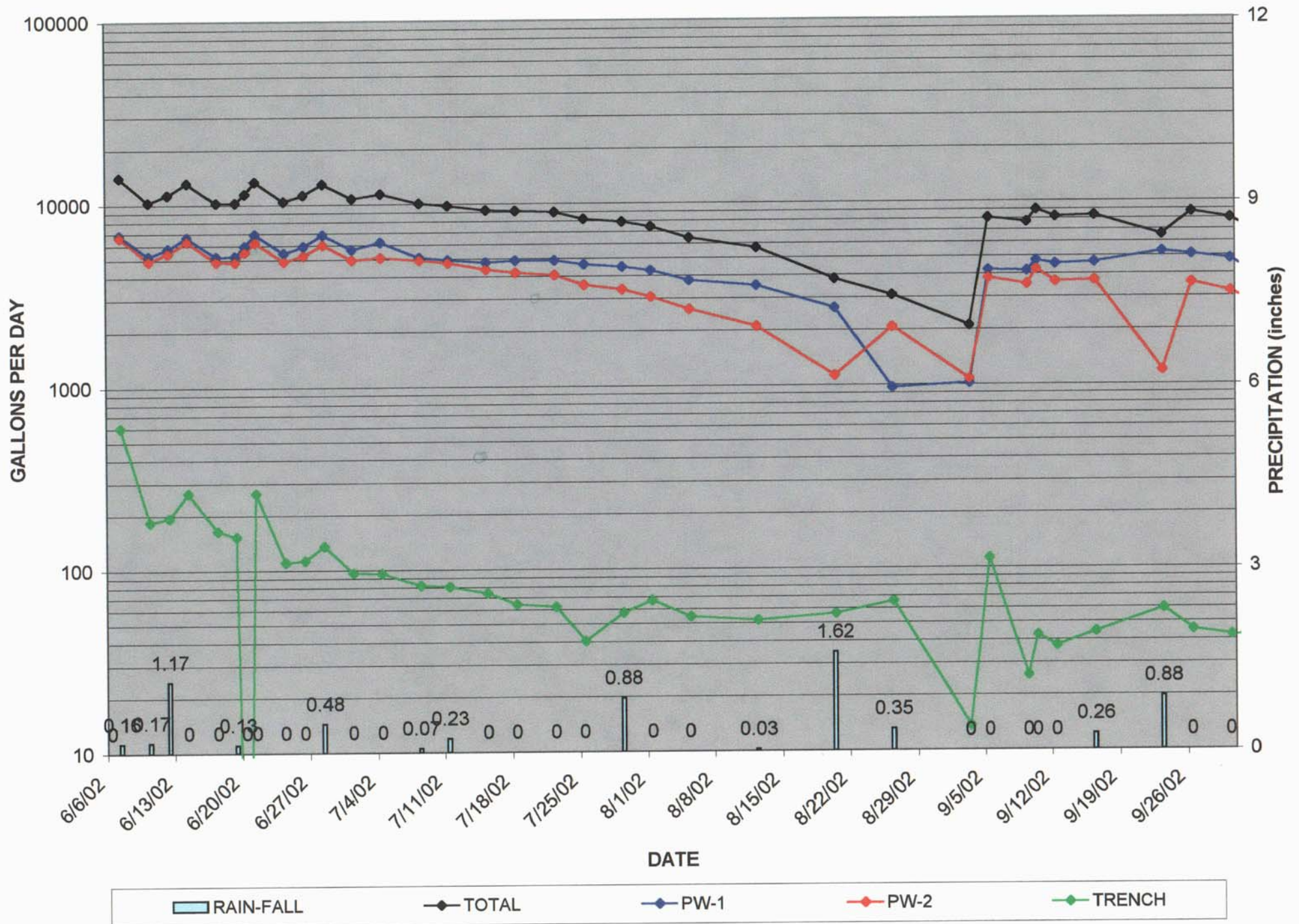

James M. Cossairt
Senior Project Geologist

c: David Garrett, EPA Region VII
Darleen Groner, MDNR



Graphs

EXTRACTION FLOW DATA



ISC-KC HYDROGRAPH

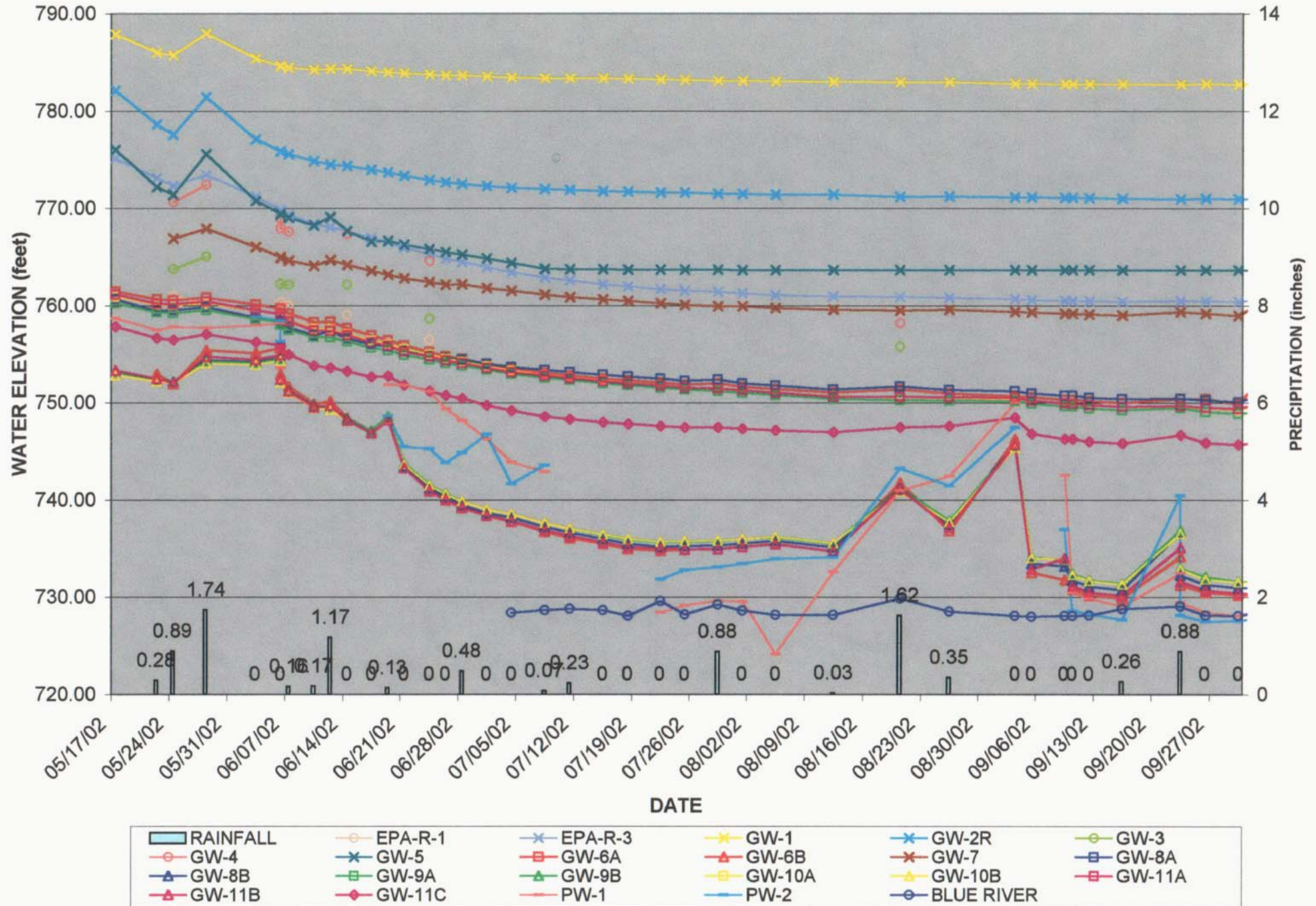
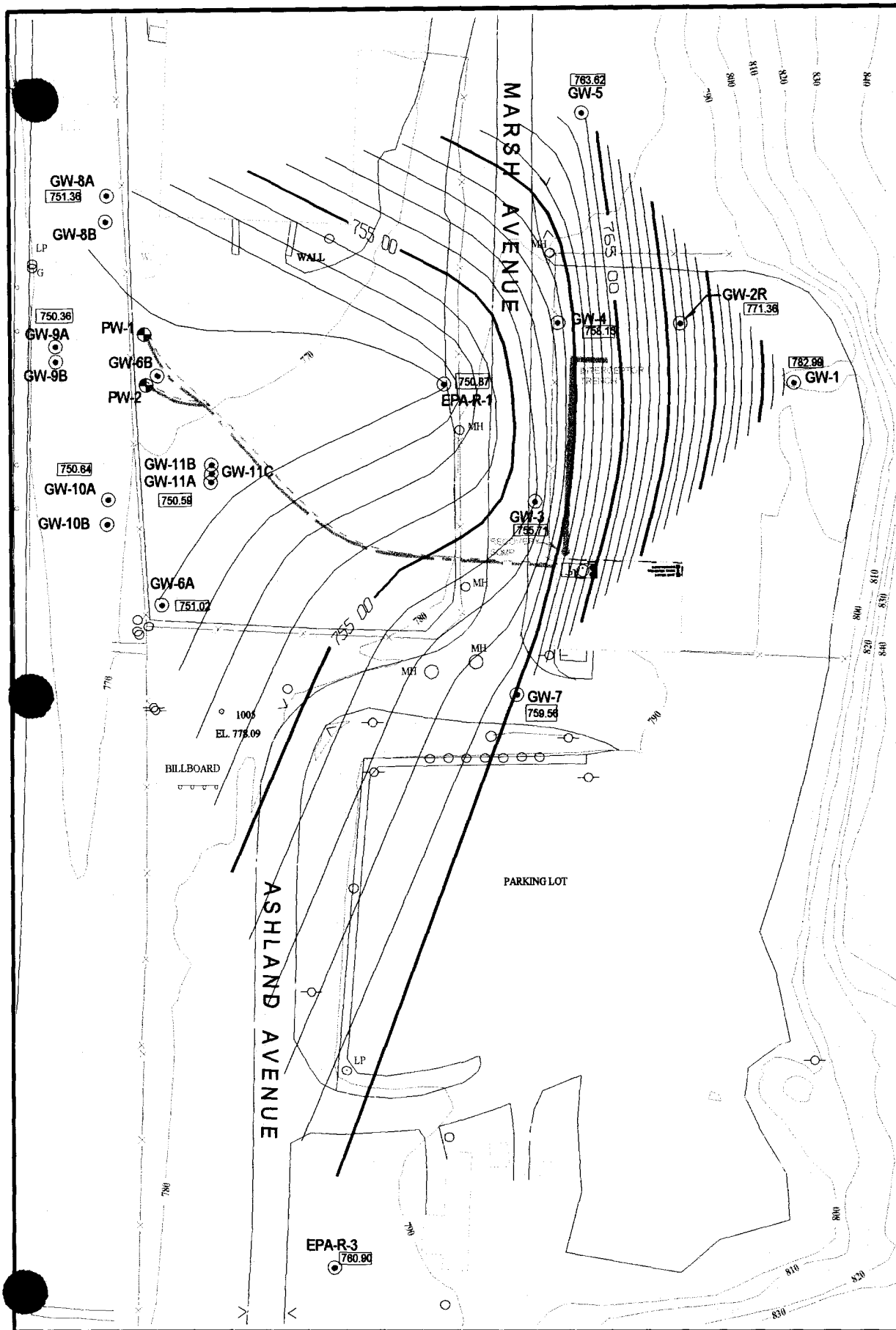


Figure 1-4



LEGEND

- MONITOR WELLS
- EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE
- EQUIPOTENTIAL LINE - 5.0 FOOT
- EQUIPOTENTIAL LINE - 1.0 FOOT
- 763.62 STATIC WATER ELEVATION (8/12/02)

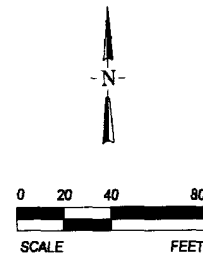


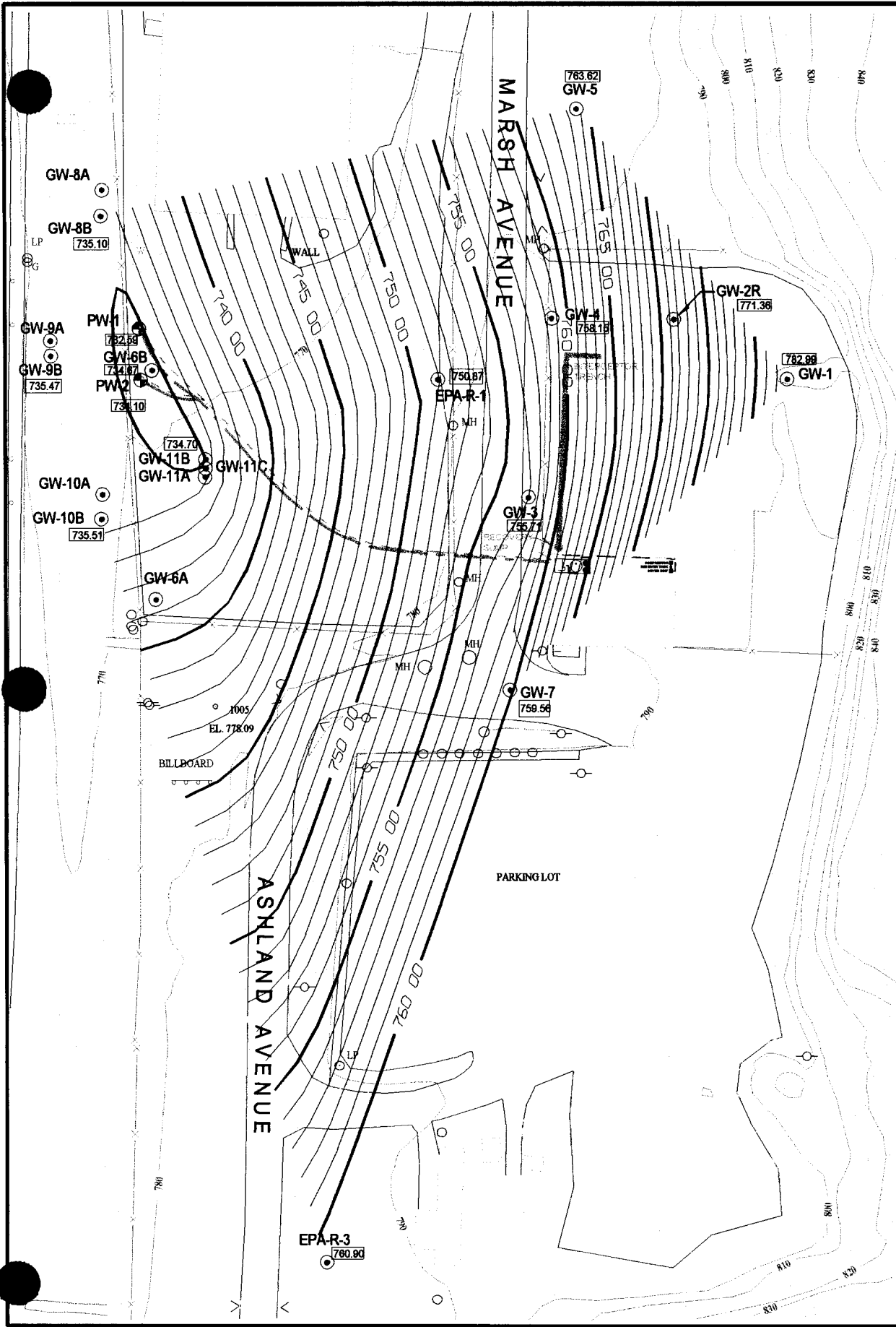
FIGURE
1

DATE	8/22/02
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POTENTIOMETRIC
SURFACE MAP

EQUIPOTENTIAL LINES CONSTRUCTED
UTILIZING "A" ZONE WELLS



LEGEND

- MONITOR WELLS
- ⊕ EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE
- EQUIPOTENTIAL LINE - 5.0 FOOT
- EQUIPOTENTIAL LINE - 1.0 FOOT
- 771.36 STATIC WATER ELEVATION (8/12/02)

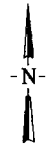


FIGURE 2	DATE	8/22/02
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	DETAILED	JMC
	CHECKED	SRA

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POTENTIOMETRIC SURFACE MAP

EQUIPOTENTIAL LINES CONSTRUCTED
UTILIZING "B" ZONE WELLS

LEGEND

- MONITOR WELLS
- ⊕ EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE
- EQUIPOTENTIAL LINE - 5.0 FOOT
- EQUIPOTENTIAL LINE - 1.0 FOOT
- 750.00 STATIC WATER ELEVATION (9/30/02)

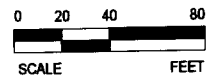
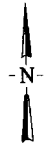


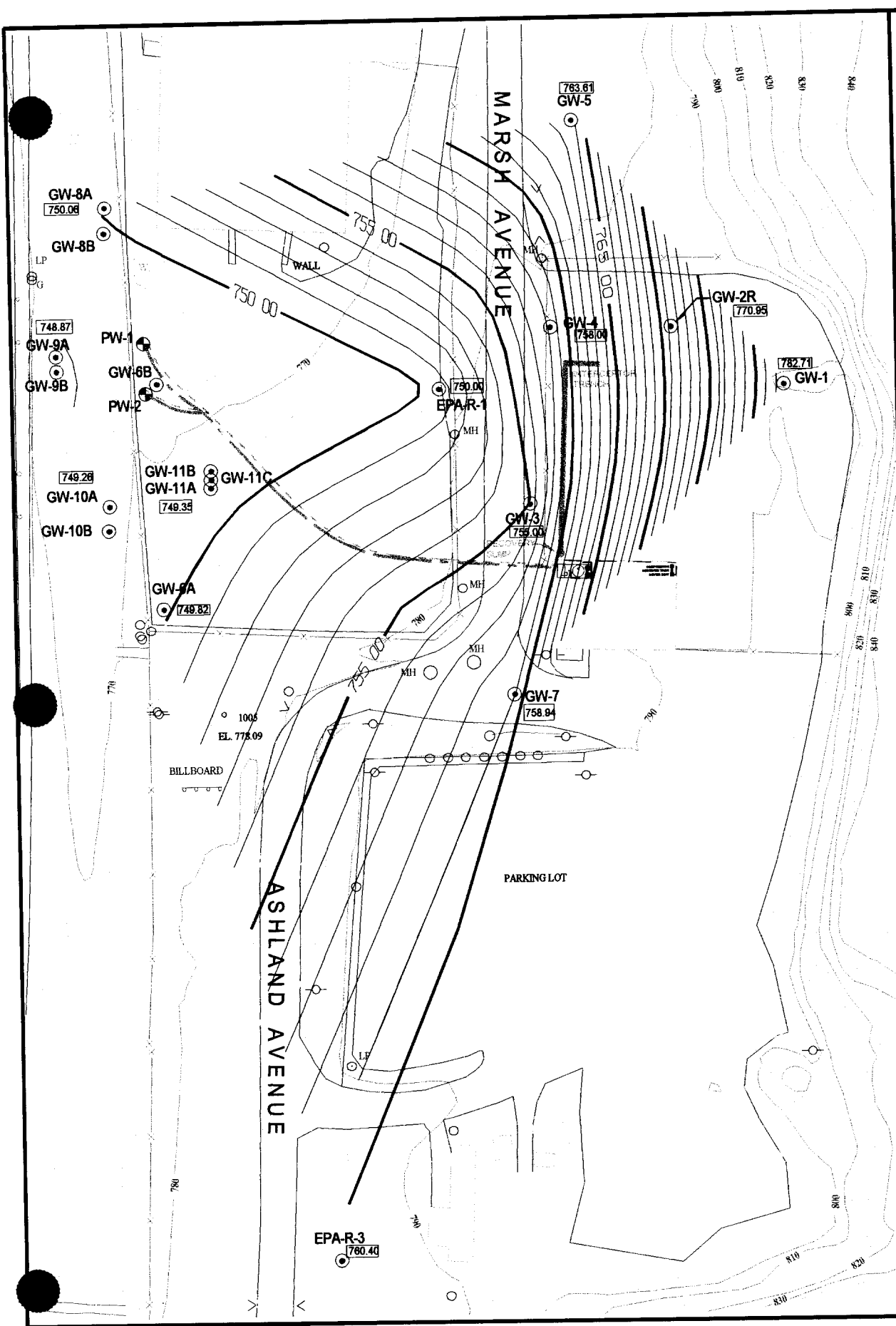
FIGURE
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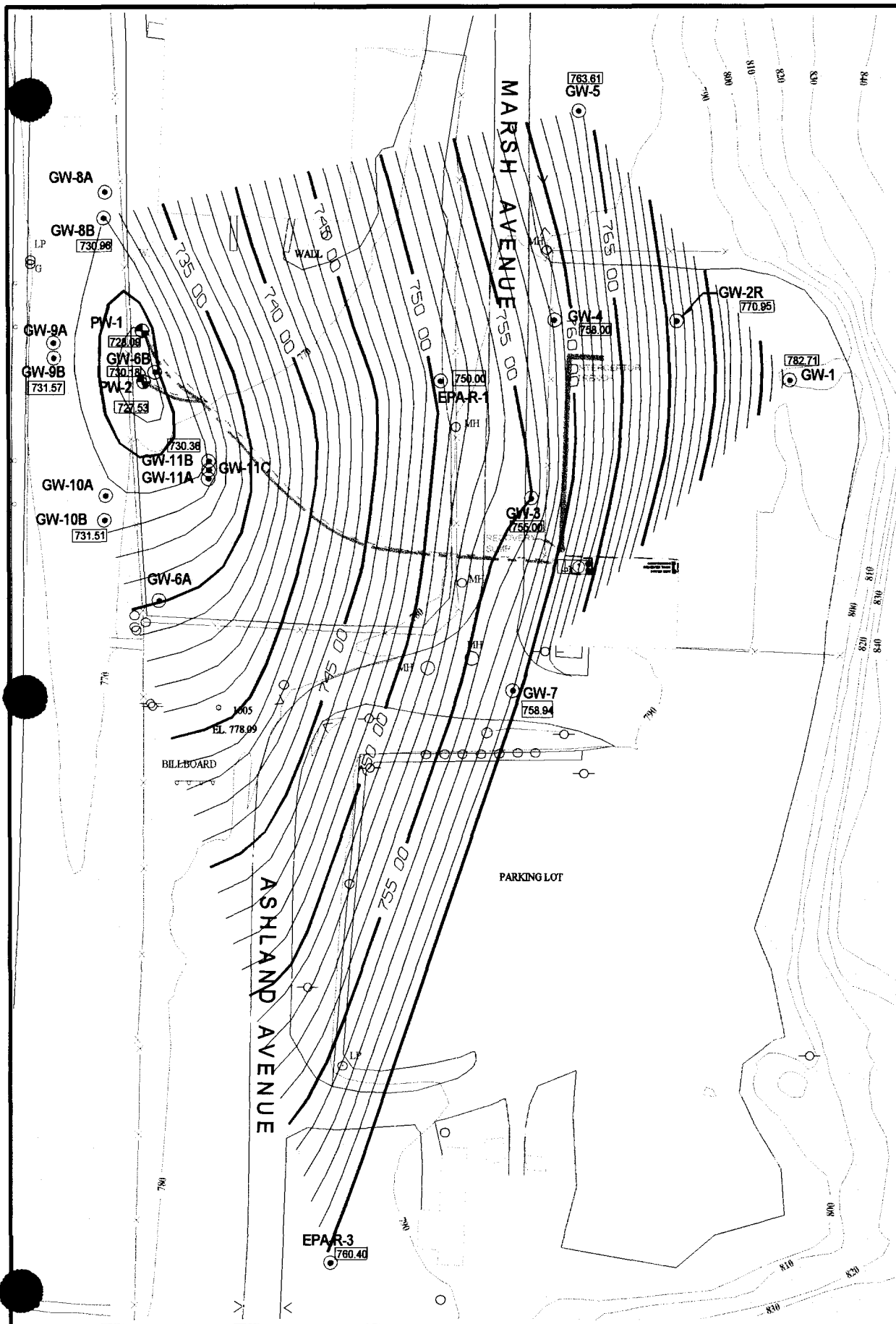
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DETAILED	JMC
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POTENTIOMETRIC SURFACE MAP

EQUIPOTENTIAL LINES CONSTRUCTED
UTILIZING "A" ZONE WELLS





LEGEND

- MONITOR WELLS
- EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE
- EQUIPOTENTIAL LINE - 5.0 FOOT
- EQUIPOTENTIAL LINE - 1.0 FOOT
- 730.18 STATIC WATER ELEVATION (9/30/02)

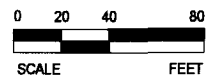
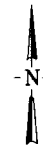


FIGURE
4

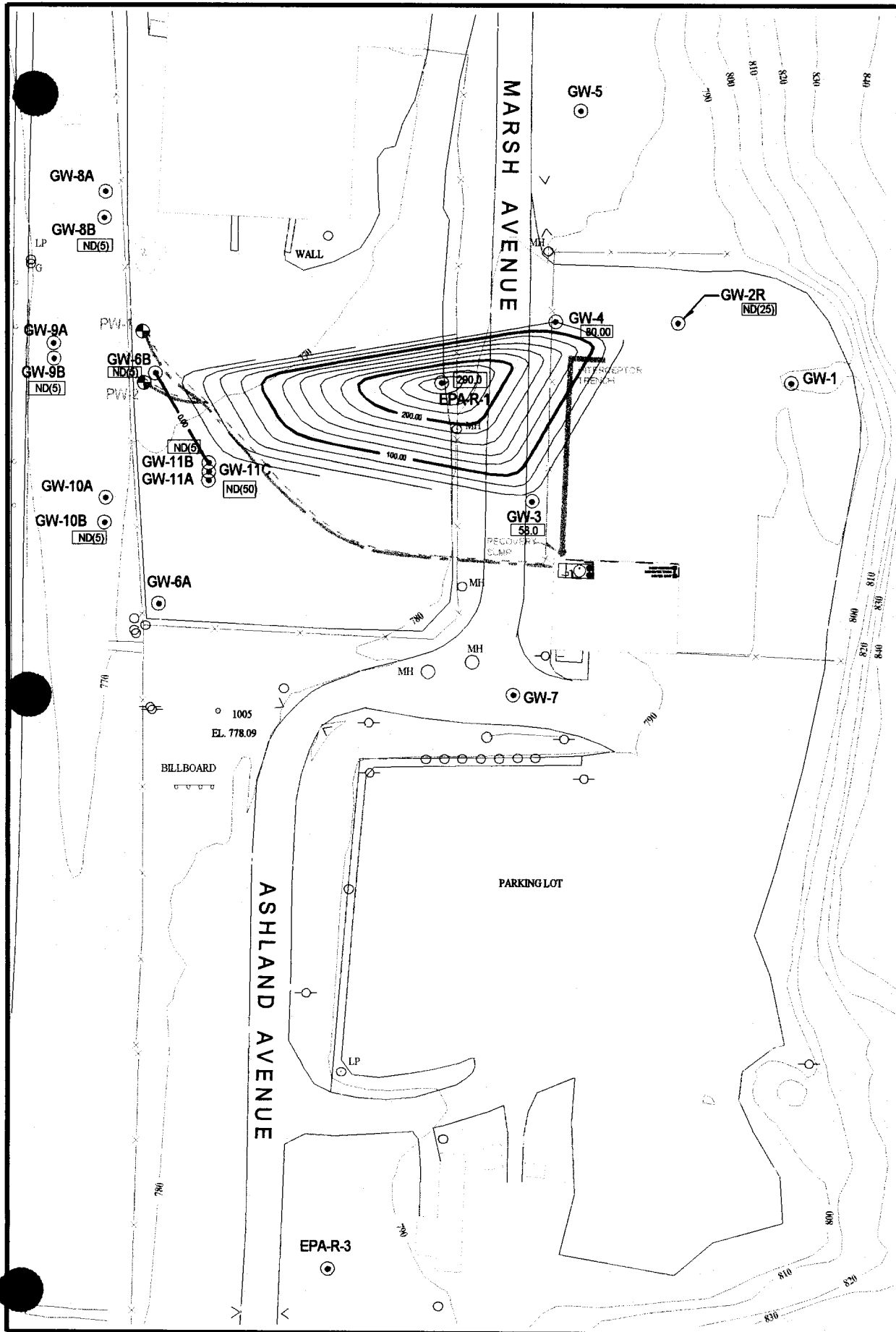
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POTENTIOMETRIC
SURFACE MAP

EQUIPOTENTIAL LINES CONSTRUCTED
UTILIZING "B" ZONE WELLS

Figure 5-10



LEGEND

- MONITOR WELLS
- ⊕ EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE
- 58.0 BENZENE (ug/L)
(8/21/02)

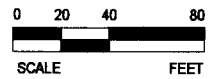
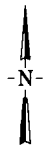
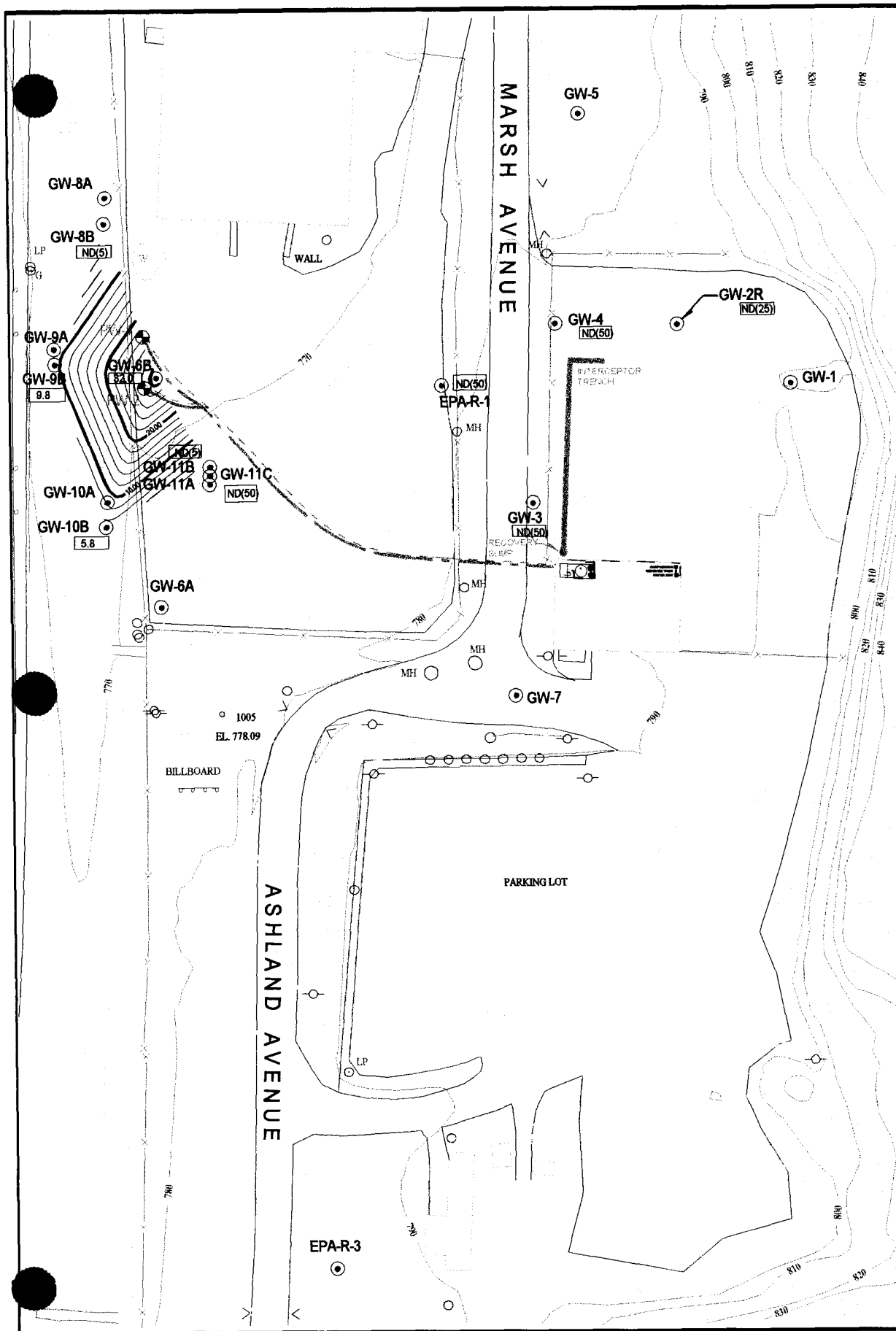


FIGURE 5	DATE	9/30/02
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BENZENE
ISOCONCENTRATION
MAP



LEGEND

- MONITOR WELLS
- EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE
- 5.8 cis-1,2-Dichloroethene (ug/L) (8/21/02)

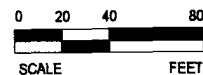
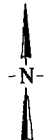
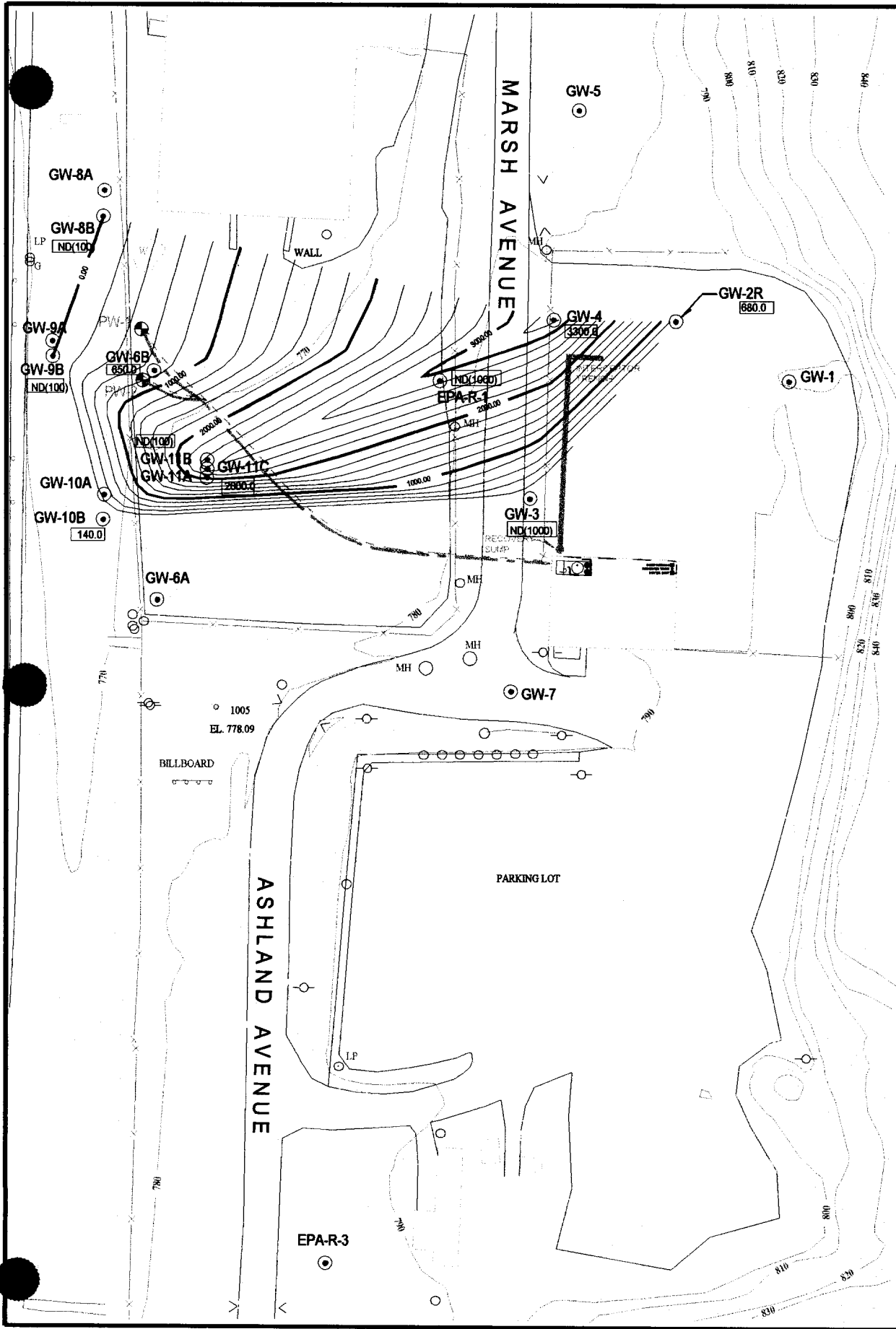


FIGURE 6	DATE	9/30/02
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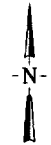
cis-1,2-Dichloroethene
ISOCONCENTRATION
MAP



LEGEND

- MONITOR WELLS
- ⊕ EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE

650.0 1,4-Dioxane (ug/L)
(8/21/02)



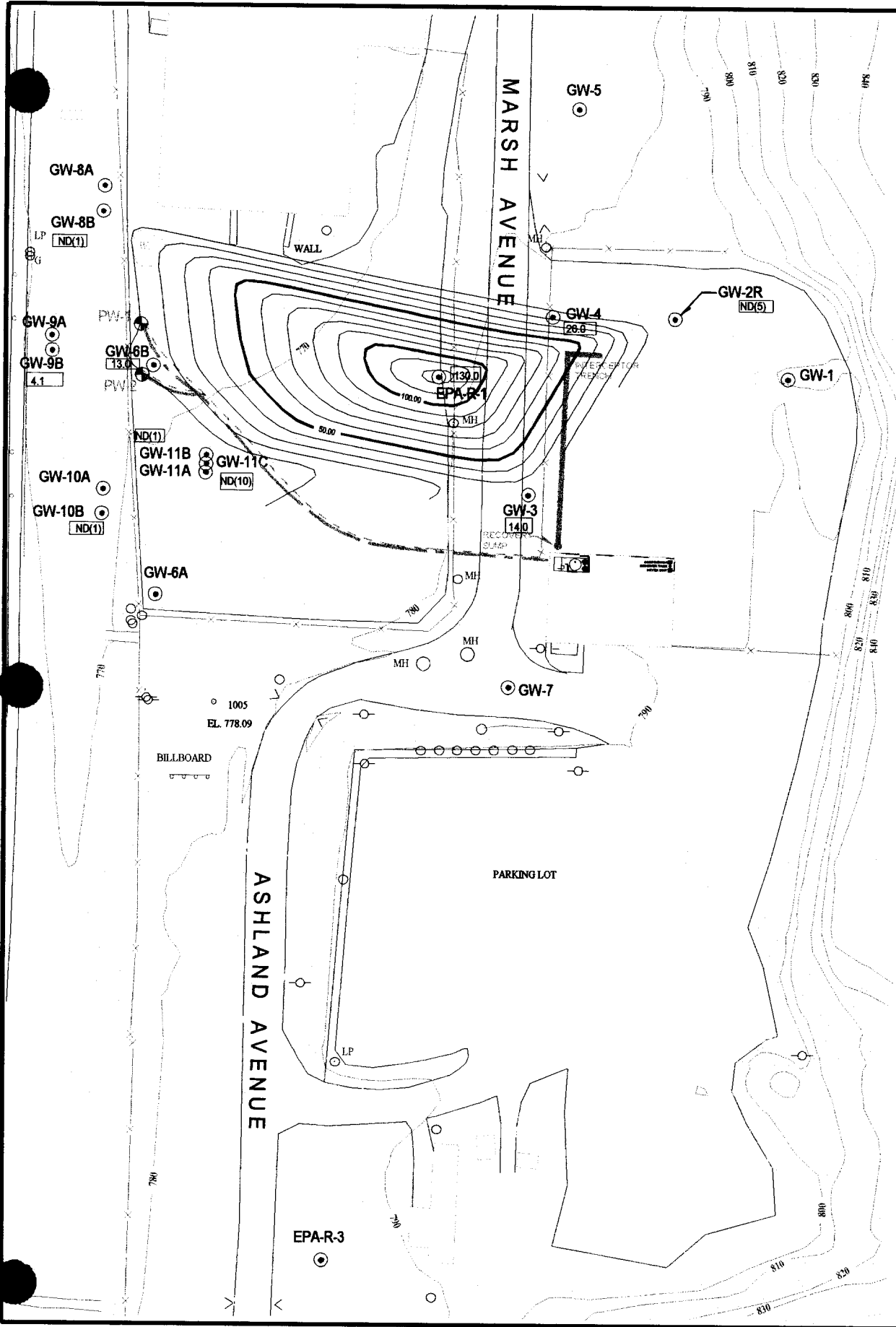
0 20 40 80
SCALE FEET

FIGURE
7

DATE	9/30/02
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DETAILED	JMC
CHECKED	SRA

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1,4-Dioxane
ISOCONCENTRATION
MAP



LEGEND

- MONITOR WELLS
- EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE

130.0 methyl tert-butyl ether (ug/L) (8/21/02)

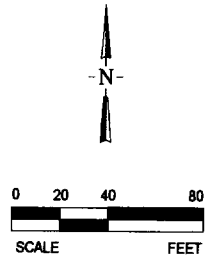
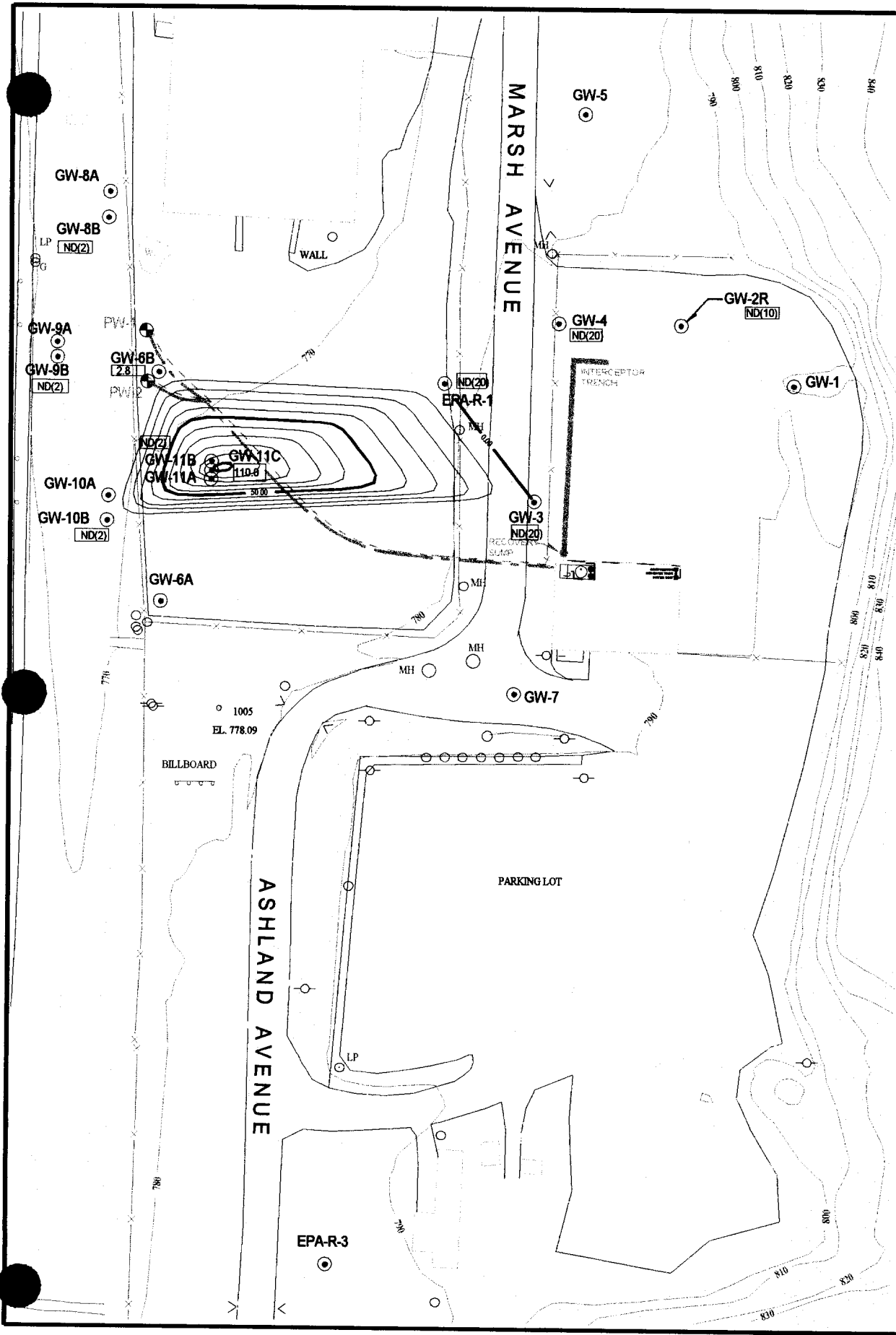


FIGURE 8	DATE 9/30/02
	DESIGNED JMC
	DETAILED JMC
	CHECKED SRA

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KANSAS CITY, MO 64126

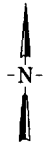
methyl tert-butyl ether
ISOCONCENTRATION
MAP



LEGEND

- MONITOR WELLS
- ⊕ EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE

2.8 vinyl chloride
(ug/L) (8/21/02)



0 20 40 80
SCALE FEET

FIGURE 9	DATE	9/30/02
	DESIGNED	JMC
	DETAILED	JMC
	CHECKED	SRA

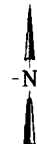
INDUSTRIAL SERVICE CORP.
1633 MARSH AVE.
KANSAS CITY, MO 64126

vinyl chloride
ISOCONCENTRATION
MAP

LEGEND

- MONITOR WELLS
- EXTRACTION WELLS
- AIR LINE
- EFFLUENT LINE

120.0 xylene (ug/L)
(8/21/02)

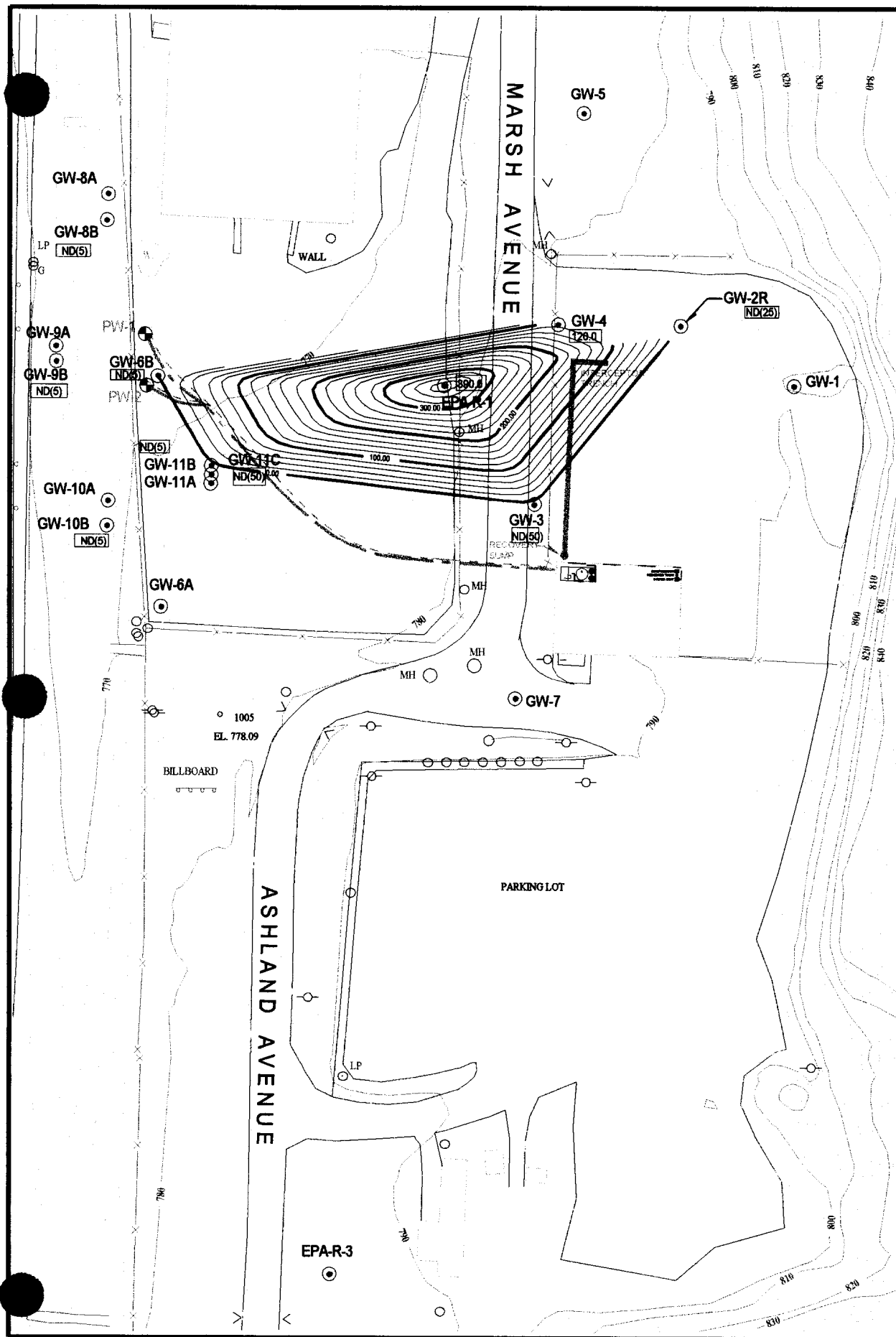


0 20 40 80
SCALE FEET

FIGURE 10	DATE	9/30/02
	DESIGNED	JMC
	DETAILED	JMC
	CHECKED	SRA

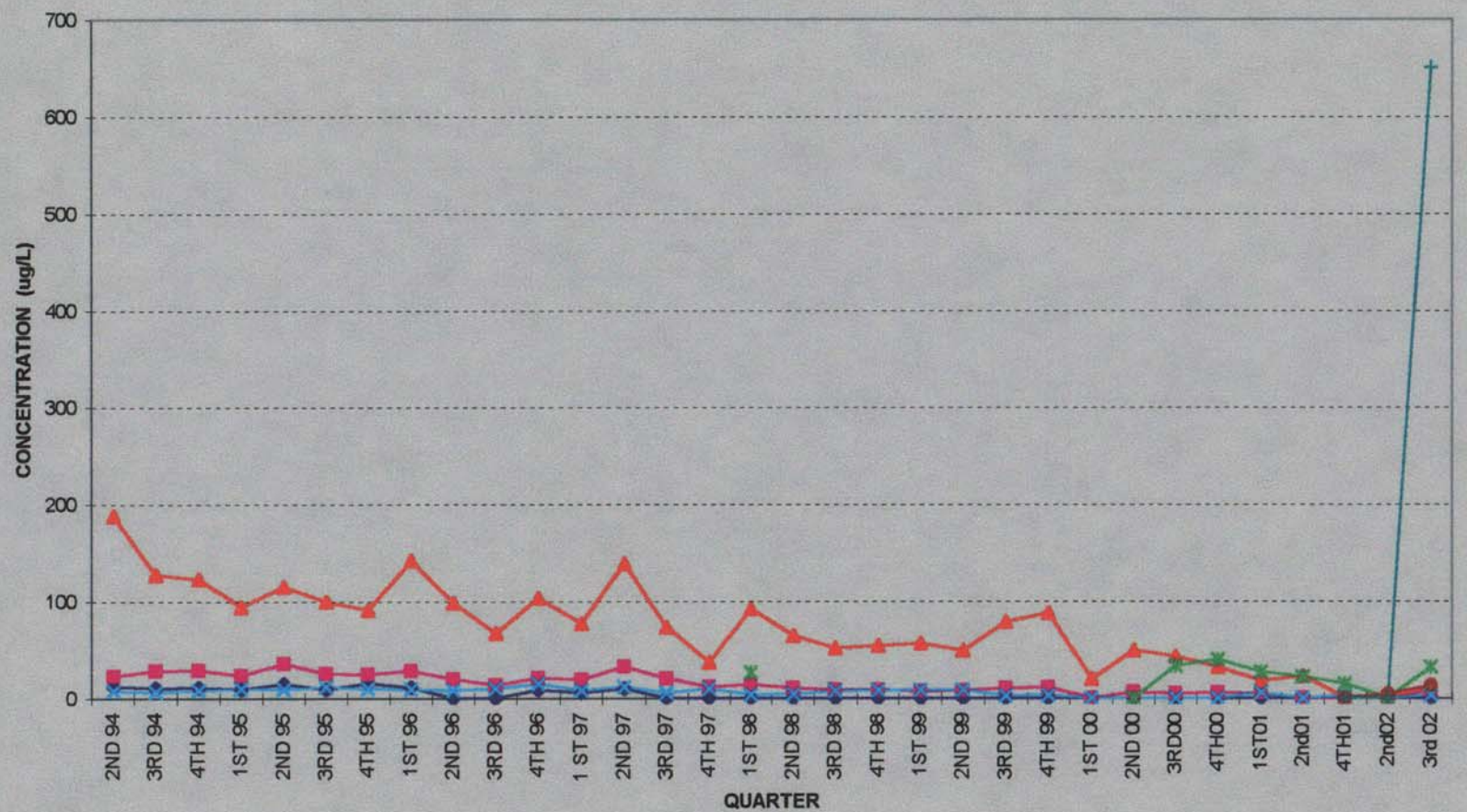
INDUSTRIAL SERVICE CORP.
1633 MARSH AVE.
KANSAS CITY, MO 64126

xylene
ISOCONCENTRATION
MAP



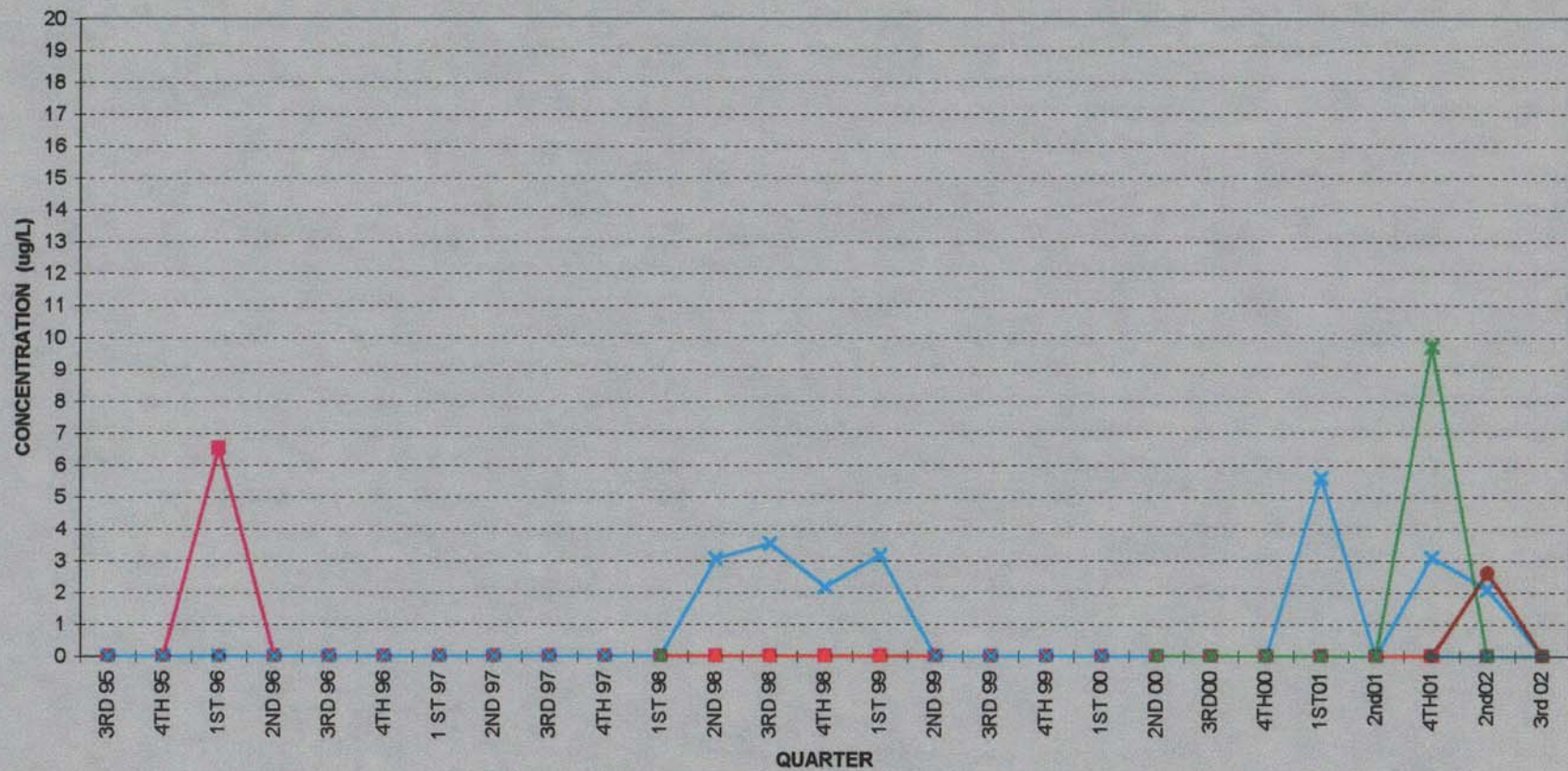
Time-Series Chart

GW-6B CONCENTRATION vs. TIME



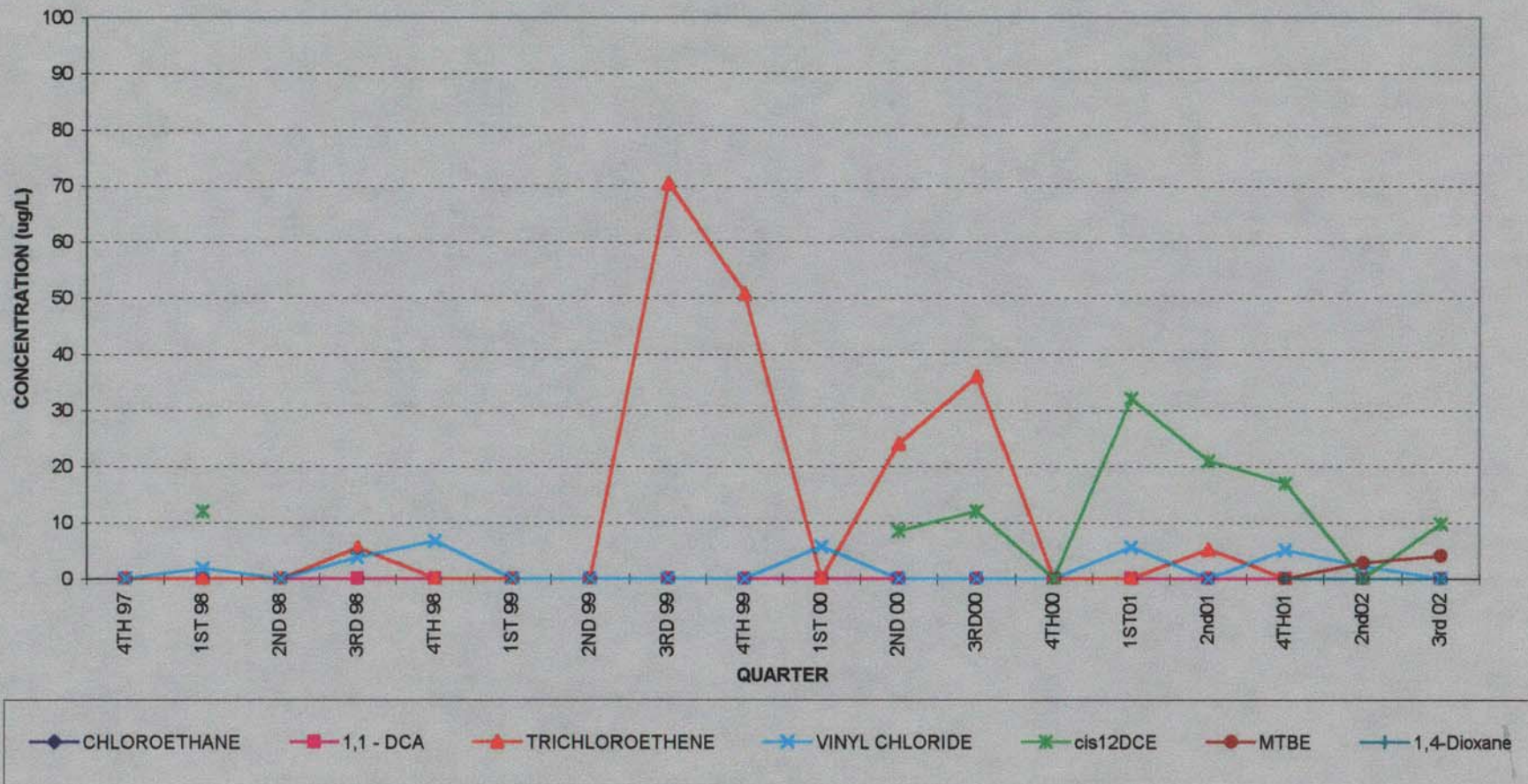
CHLOROETHANE 1,1 - DCA TRICHLOROETHENE VINYL CHLORIDE cis12DCE MTBE 1,4-Dioxane

GW-8B CONCENTRATION vs. TIME

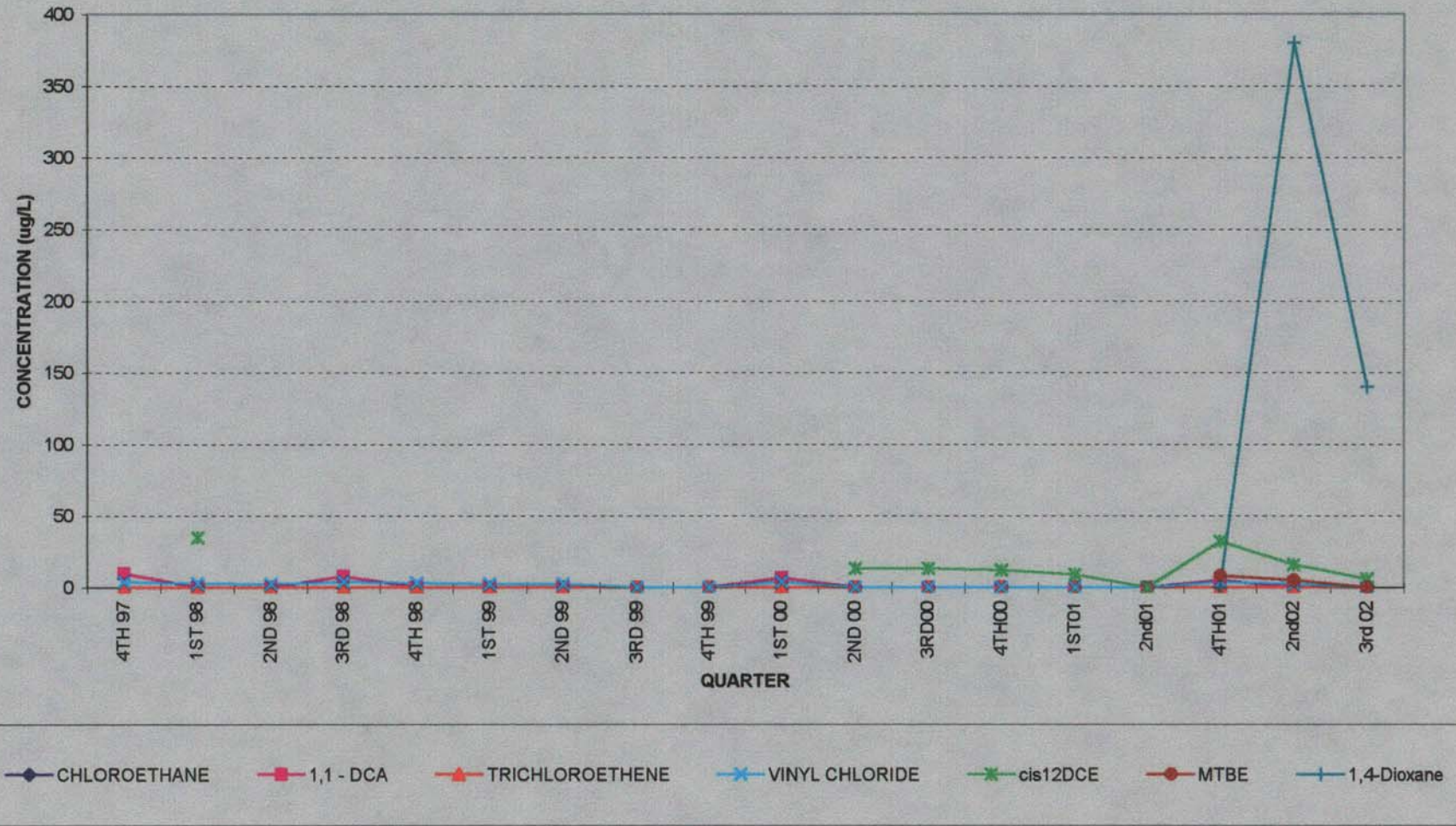


◆ CHLOROETHANE
■ 1,1 - DCA
▲ TRICHLOROETHENE
× VINYL CHLORIDE
★ cis12DCE
● MTBE
+ 1,4-Dioxane

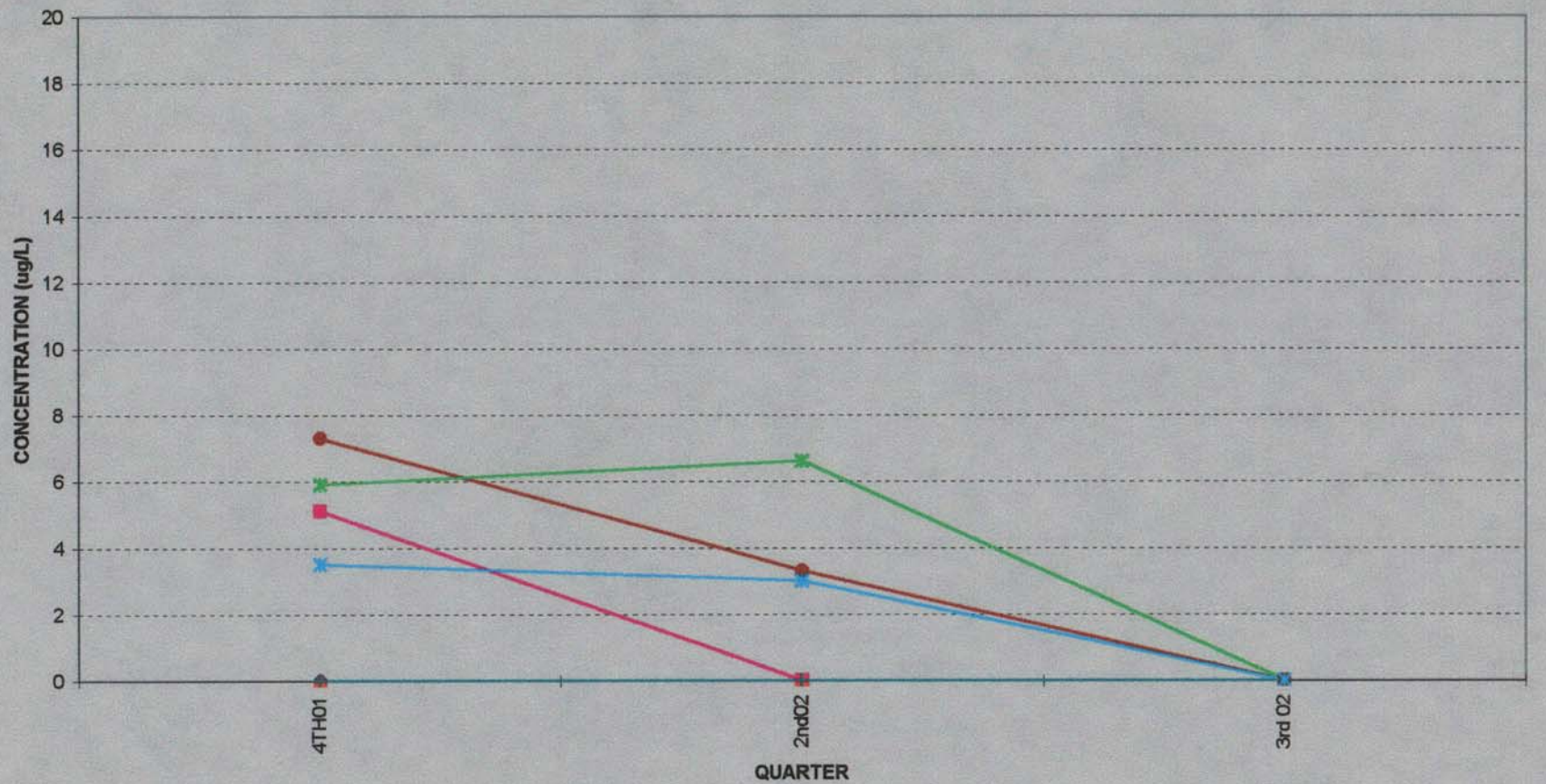
GW-9B CONCENTRATION vs. TIME



GW-10B CONCENTRATION vs. TIME

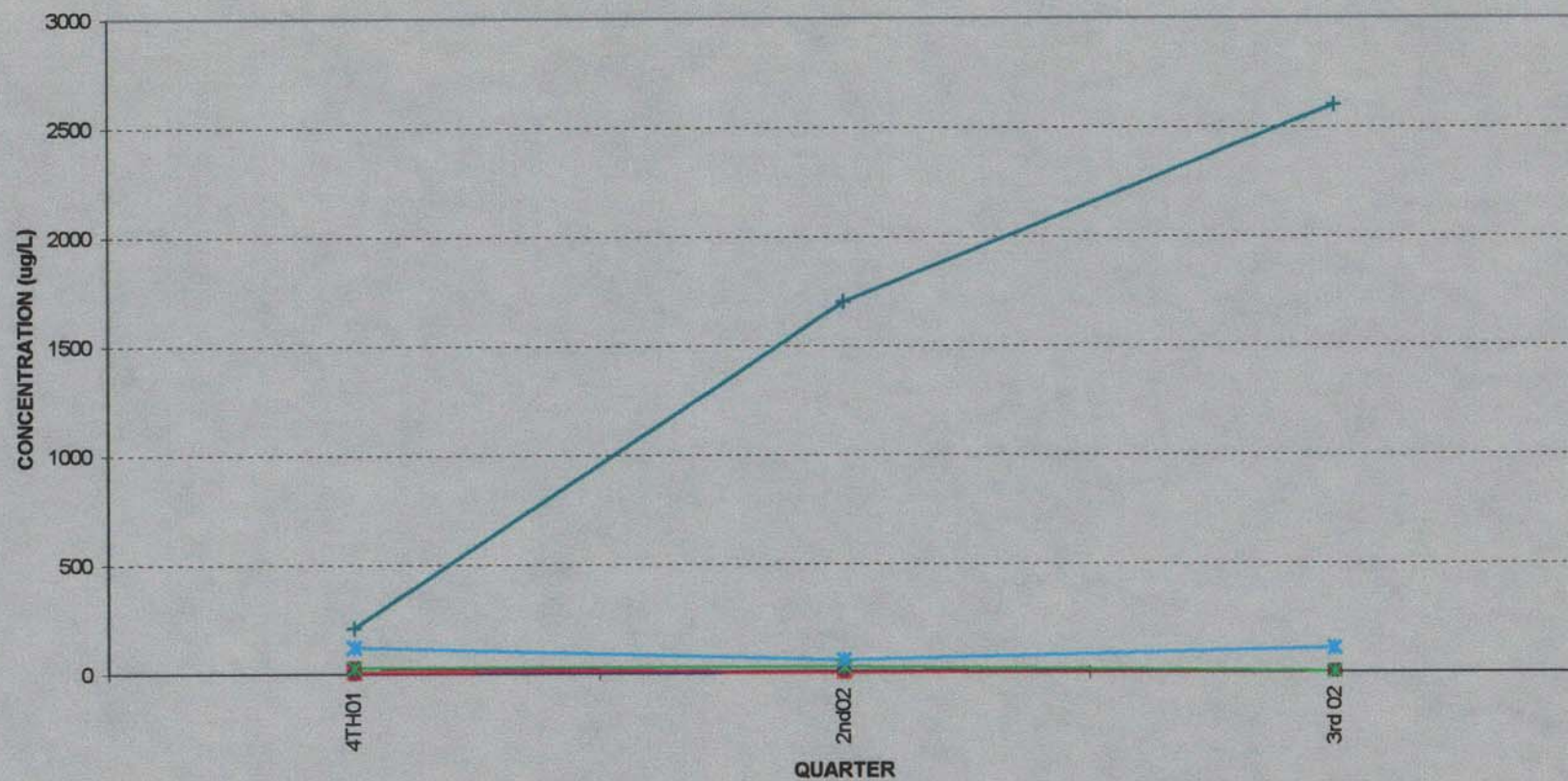


GW-11B CONCENTRATION vs. TIME



CHLOROETHANE 1,1 - DCA TRICHLOROETHENE MTBE 1,4-Dioxane cis12DCE VINYL CHLORIDE

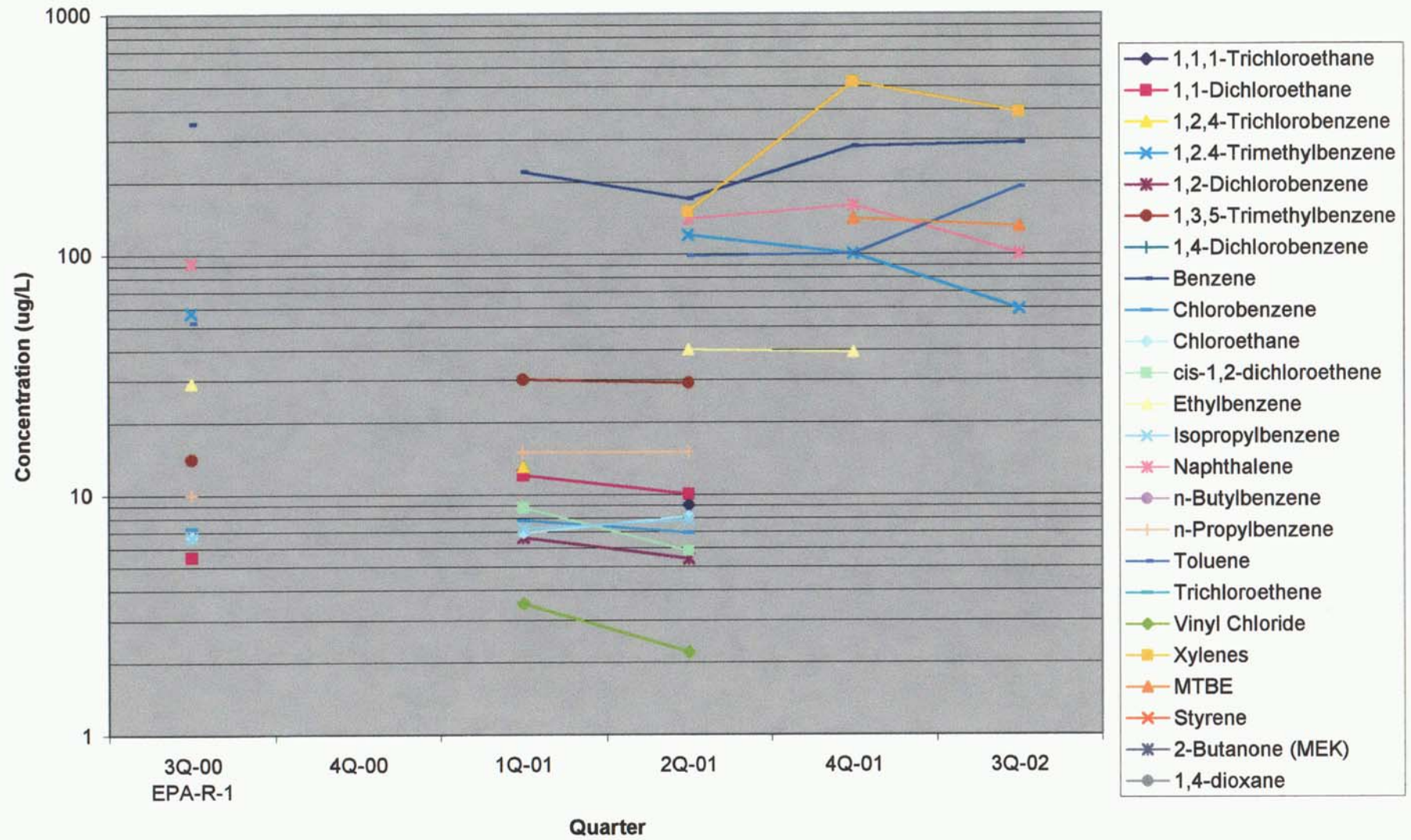
GW-11C CONCENTRATION vs. TIME



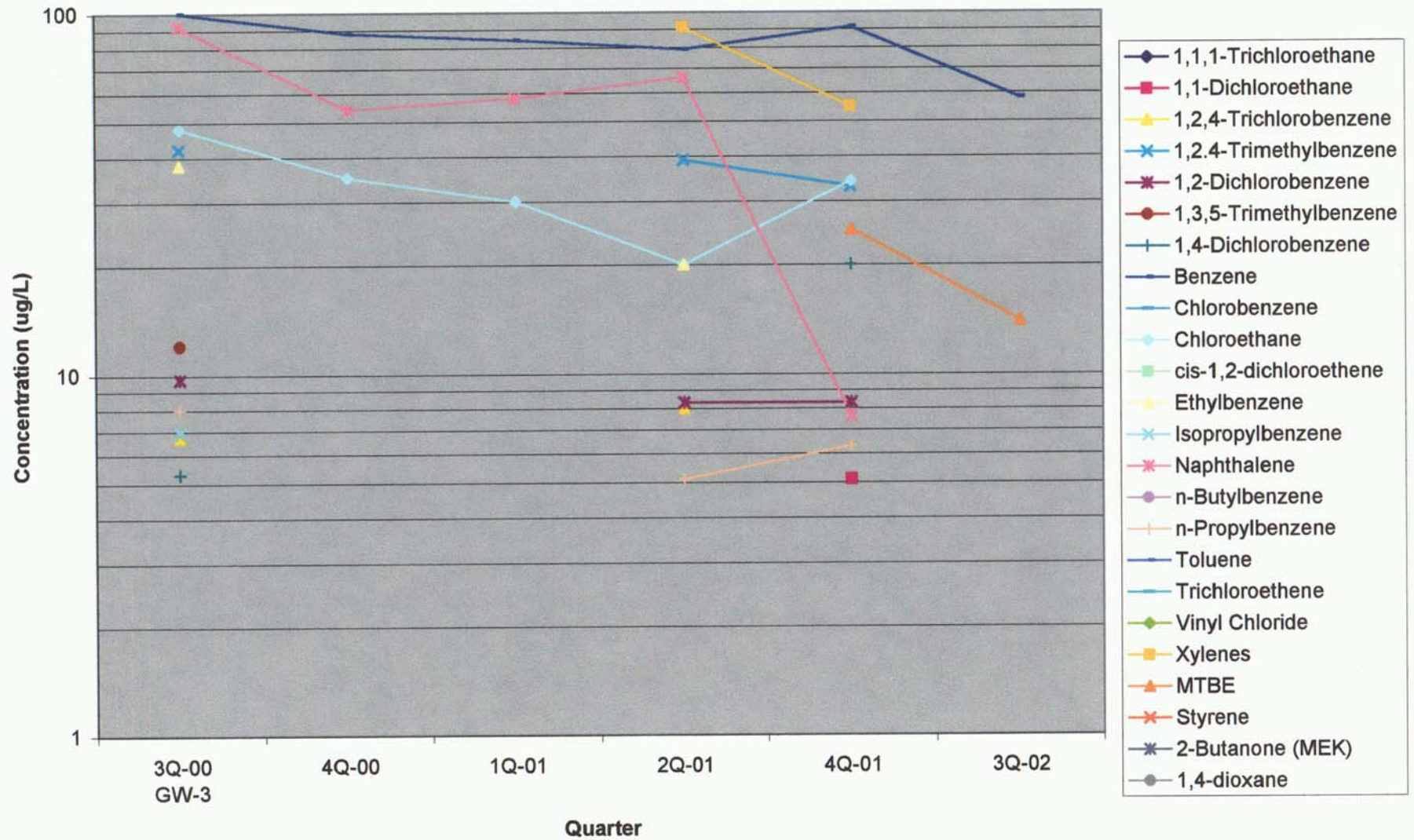
◆ CHLOROETHANE ■ 1,1 - DCA ▲ TRICHLOROETHENE ● MTBE + 1,4-Dioxane ✖ cis12DCE ✖ VINYL CHLORIDE

LNAPL Charts

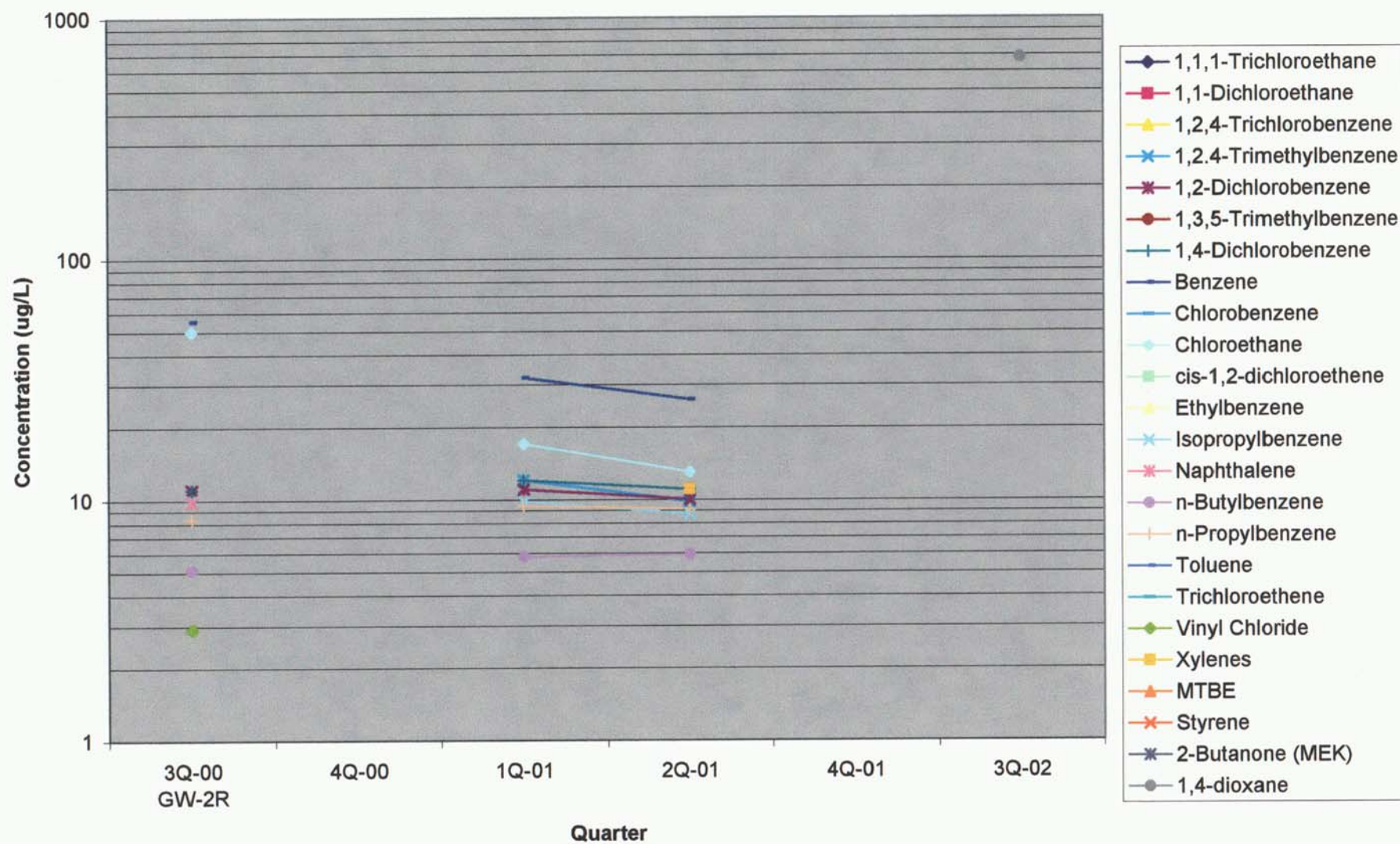
Time Series Graph



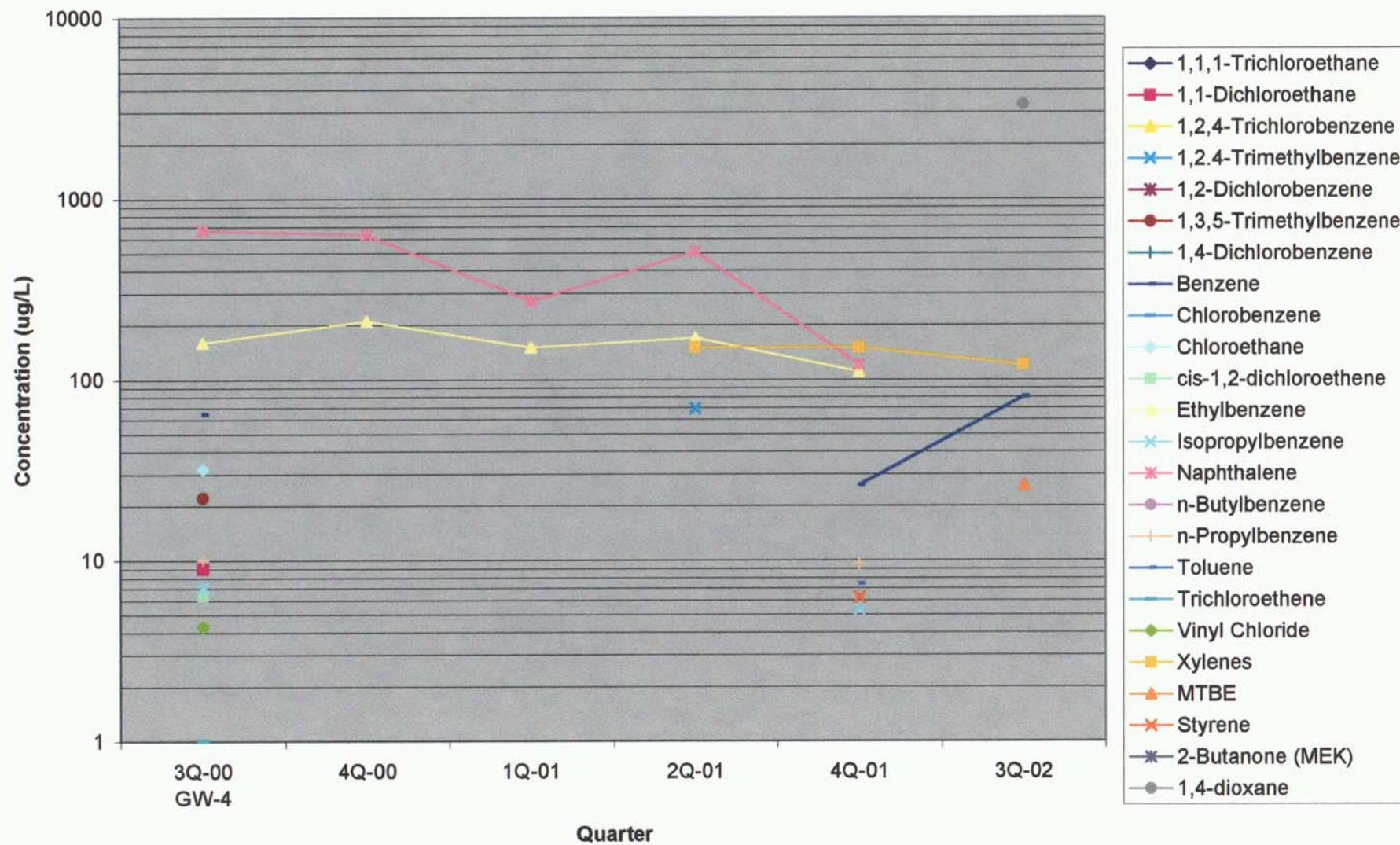
Time Series Graph



Time Series Graph



Time Series Graph



QA/QC Summary



Environmental Science Corporation

Mount Juliet, TN

For: Deffenbaugh Industries

Project : ISC-KC
Project No.: ISC-KC Post Closure

Login: L87336

Client Sample ID

Lab Sample ID.

INF PW1
INF PW2
INF TRENCH
EFF

GW-3
GW-4
EPA-R-1

GW-6B
GW-8B
GW-9B
GW-10B
GW-11A
GW-11B
GW-11C

TRIP BLANK

DUP

RINSE BLANK
GW-2R

L87336-01
L87336-02
L87336-03
L87336-04
L87336-06
L87336-07
L87336-08
L87336-09
L87336-10
L87336-11
L87336-12
L87336-13
L87336-14
L87336-15
L87336-18
L87336-19
L87336-20
L87336-21

Environmental Science Corp.
12065 Lebanon Pike
Mount Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

EST. 1970



Environmental Science Corporation Mount Juliet, TN

For: Deffenbaugh Industries
Project: ISC-KC
Project No.: ISC-KC – Post Closure
QAD1512

SDG: L87336

August 20, 2002

Sample Receiving and handling

All samples were received at the correct temperature, in the proper containers, and with the appropriate preservatives. All method holding times were met.

METHOD – Volatile Organic Compounds by Method 8260

Laboratory Control Standard (LCS)

Samples L87336-01, -09, -10, -12, and -18 were analyzed in analytic batch WG81746. The laboratory control standard associated with these samples had all compounds within laboratory control limits except acrolein and iodomethane.

Samples L87336-02, -04, -06, -07, -08, -11, -13, -14, -15, -20, and -21 were analyzed in analytic batch WG81898. The laboratory control standard associated with these samples had all compounds within laboratory control limits except acrolein and iodomethane.

Samples L87336-03 and L87336-19 were analyzed in analytic batch WG82040. The laboratory control standard associated with these samples had all compounds within laboratory control limits except acrolein and iodomethane.

Matrix Spike and Matrix Spike Duplicate (MS/MSD)

For analytic batch WG81746, matrix spike and matrix spike duplicate analysis was performed on client sample L87336-14. The spike recoveries were within laboratory control limits for all compounds except 2-chloroethylvinyl ether. The relative percent difference were within laboratory control limits for all compounds.



Environmental Science Corporation Mount Juliet, TN

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For analytic batch WG81898, matrix spike and matrix spike duplicate analysis was performed on client sample L87336-20. The spike recoveries were within laboratory control limits for all compounds except 2-chloroethylvinyl ether. The relative percent difference were within laboratory control limits for all compounds.

For analytic batch WG82040, matrix spike and matrix spike duplicate analysis was performed on client sample L87336-19. The matrix spike duplicate internal standard responses were below the method limit. No spike recoveries or relative percent difference were determined.

For analytic batch WG82040, matrix spike and matrix spike duplicate analysis was also performed on the laboratory control sample. The spike recoveries were within laboratory control limits for all compounds except 4-methyl-2-pentanone (MIBK). The relative percent difference were within laboratory control limits for all compounds except vinyl acetate.

Blank Analysis

The method blank, the initial calibration, and all continuing calibration blanks were below the method quantitation limit for target compounds.

Surrogate Recoveries

All surrogate recoveries were within laboratory control limits for all samples and quality control samples. The alternate surrogate, a,a,a-trifluorotoluene recoveries were below the lower control limit.

Internal Standards

All internal standard responses and retention times were within the method limits.

Calibration Summary

VOCGCMs#1 was initially calibrated on 8/19/02. The initial and continuing calibration verification standard recoveries were within method limits.



Environmental Science Corporation Mount Juliet, TN

For: Deffenbaugh Industries
Project: ISC-KC
Project No.: ISC-KC – Post Closure
QAD1512

SDG: L87336

Instrument Performance Standards

The BFB (Bromofluorobenzene) instrument tuning compounds was within method parameters. All samples were analyzed within 12 hours of a successful instrument tune.

Susan Murphy

Quality Control Specialist
Environmental Science Corp.